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Subjective outcome evaluation of the Project PATHS based on different cohorts of students

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Abstract

The Project PATHS (Positive Adolescent Training through Holistic Social Programs) is a positive youth development program in Hong Kong. After completion of the curricular-based Tier 1 Program, subjective outcome evaluation data were collected from 216 schools involving 93,020 participants. With schools as the unit of analysis, results showed that participants had positive perceptions of the program and implementers, with roughly $\frac{4}{5}$ of the participants regarding the program as helpful to them. There were some significant differences in the subjective outcome evaluation findings between grades, although the effect size was small. Multiple regression analyses revealed that perceived qualities of the program and the program implementers predicted perceived effectiveness of the program. The present study suggests that irrespective of cohorts, students in the junior secondary years perceive the program to be beneficial to them.

Keywords: adolescence; Hong Kong; positive youth development; Project PATHS; subjective outcome evaluation.

Introduction

Positive youth development (PYD) can be understood as the growth, cultivation, and nurturance of developmental assets, abilities, and potentials in adolescents. It attempts to understand adolescents in terms of strengths, instead of problems or risky behaviors (1). The main tenet of PYD is to promote different developmental competencies among youths (2–4). Instead of simply fixing problems, this approach aims at building youth assets that help them avoid a range of adolescent risk behaviors and perform their role successfully in various contexts (e.g., families, schools, and communities) (5–8). Catalano et al. (2) reviewed comprehensively the PYD literature and identified 15 characteristics of effective PYD programs. These include promotion of bonding, cultivation of resilience, promotion of social competence, promotion of emotional competence, promotion of cognitive competence, promotion of behavioral competence, promotion of moral competence, cultivation of self-determination, promotion of spirituality, development of self-efficacy, development of a clear and positive identity, promotion of beliefs in the future, provision of recognition for positive behavior, provision of opportunities for prosocial involvement, and fostering prosocial norms.

Despite the empirical literature documenting the beneficial effects of using a PYD approach in facilitating the youths' behavioral and emotional functioning, researchers have reached little agreement on defining a "positive youth development program" (9). In addition, as the majority of PYD studies were predominately conducted in Western countries, little is known whether the previous findings would be varied by different subgroups of participants, such as adolescents in non-Western contexts. Assuming the application of concepts and behaviors is universal to every individual in a population might be considered debatable and lead to problematic results (10).

As remarked by Gillham et al. (11), the discrepancies in the conceptualization of the programs "raise questions about the definition of positive youth development programs and the ways in which these programs differ from preventive interventions in general" (p. 3). The conception of "positive youth development" might vary across cultures as the scope and meaning of this subjective positive experience are conceptualized and prescribed by a particular set of values, norms, and morals within society (12). In particular, Catalano et al. (13) recently argued that more research is needed "to understand how well they can be implemented in real-world settings and what effects they are likely to have…and examine differences of effects on relevant subgroups (e.g., culture, gender, age etc.)" (p. S93). Obviously, the collection of data from non-Western cultural contexts would be illuminating.

There has been some discussion in the literature on how the quality of a program can be enhanced by tailoring an appropriate program to suit the values and needs of target populations (9, 14, 15). For example, using the Youth Program Quality

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Assessment (YPQA) instrument, researchers found that the effect of program delivery qualities varied with student's age (16). In addition, a positive youth-oriented approach was found to be more beneficial for high-school students, while staff-oriented pedagogy was more appropriate for elementary school students (15, 16). Unfortunately, although program components and their interactions with individual factors are important determinants of the effectiveness of youth programs, very few studies have examined the effect of different program components on perceived program effectiveness, especially in the Chinese context.

The Project "PATHS to Adulthood: A Jockey Club Youth Enhancement Scheme" is a large-scale positive youth development program designed for junior secondary school students (Secondary 1–3, i.e., Grades 7–9) in Hong Kong (17). The word "PATHS" denotes Positive Adolescent Training through Holistic Social Programs. It consists of two tiers of program. The Tier 1 Program targets all students joining the program in a particular form (i.e., universal prevention initiative). Through the use of structured curriculum, students learn competencies with reference to the 15 positive youth development constructs (17). The Tier 2 Program is specially designed for students with greater psychosocial needs in different psychosocial domains (i.e., selective prevention). After completion of the Tier 1 Program, program participants were required to complete subjective outcome evaluation form (Form A).

Previous studies have documented the positive program effects of the Tier 1 Program of the Project PATHS (18–20). Generally, participants (students and program implementers) perceived the program positively. However, as previous studies normally examined the impact based on the homogenous sample (i.e., participants in the same grade), little is known whether the impact of the program will vary depending on the students' grade level. In addition, we know little about how perceptions of the program quality, views toward program implementers, and perceptions of program effectiveness are related to each other.

Against the above background, the goal of the present study is to explore whether the relationships between program features and perceived program effectiveness would differ by students' grade level. The findings of the study would increase our knowledge about effective positive youth development program among Chinese adolescents.

Methods

Participants and procedures

A total of 216 schools with 93,020 students[1] joined the Project PATHS in the third year of the Full Implementation Phase in the school year 2008–2009. A total of 562 aggregated data was collected across three grade levels (i.e., Secondary 1 level: 197 schools, Secondary 2 level: 198 schools and Secondary 3 level: 167 schools). The mean number of students per school was 165.52 (ranged from 5 to 263 students), with an average of 4.62 classes per school (ranged from 1 to 8 classes). Among them, 43.42% of the respondent schools adopted the full program (i.e., 20-hour program involving 40 units) whereas 56.58% of the respondent schools adopted the core program (i.e., 10-hour program involving 20 units). The mean number of sessions used to implement the program was 23.14 (ranged from 4 to 66 sessions). While 50.18% of the participating schools incorporated the program into the formal curriculum (e.g., Liberal Studies, Life Education), 49.82% used other modes (e.g., class teacher's periods or any classes and events that differed from normal class schedule) to implement the program. The mean number of social workers and teachers implementing the program per school were 1.73 (ranged from 0 to 10) and 5.60 (ranged from 0 to 28), respectively.

After completion of the Tier 1 Program, the participants were invited to respond to a Subjective Outcome Evaluation Form (Form A) developed by the first author (21). The data collection was carried out at the last session of the program. On the day of data collection, the purpose of the evaluation was mentioned, and the confidentiality of the data was repeatedly emphasized to all students. The students were asked to indicate their wish if they did not want to participate in the study (i.e., "passive" informed consent was obtained from the students). All participants responded to all scales in the evaluation form in a self-administration format. Adequate time was provided for the participants to complete the questionnaire.

Instruments

The Subjective Outcome Evaluation Form (Form A) was used. Broadly speaking, there are several parts in this evaluation form as follows:

- Participants' perceptions of the program, such as program objectives, design, classroom atmosphere, interaction among the students, and the respondents' participation during class (10 items).
- Participants' perceptions of the program implementers, such as the preparation of the instructor, professional attitude, involvement, and interaction with the students (10 items).
- Participants' perceptions of the effectiveness of the program, such as promotion of different psychosocial competencies, resilience, and overall personal development (16 items).
- The extent to which the participants would recommend the program to other people with similar needs (1 item).
- The extent to which the participants would join similar programs in the future (1 item).
- Overall satisfaction with the program (1 item).
- Things that the participants learned from the program (open-ended question).
- Things that the participants appreciated most (open-ended question).
- Opinion about the instructor(s) (open-ended question).
- Areas that require improvement (open-ended question).

For the quantitative data, the implementers collecting the data were requested to input the data in an EXCEL file developed by the Research Team which would automatically compute the frequencies and percentages associated with the different ratings for an item. When the schools submitted the reports, they were also requested to submit the soft copy of the consolidated data sheets. In the reports prepared by the schools, the workers were also required to estimate the degree of adherence to the program manuals (i.e., the extent to which the program is implemented in accordance with the program manuals). To facilitate the program evaluation, the Research Team developed an evaluation manual with standardized instructions for collecting the subjective outcome evaluation data (21). In addition,

[1]Number of students based on data aggregated at the school level.

adequate training was provided to the implementers during the 20-h training workshops on how to collect and analyze the data collected by Form A. After receiving the consolidated data by the funding body, the data were aggregated to "re-construct" the overall profile based on the subjective outcome evaluation data by the Research Team.

Data analyses

Percentage findings were examined using descriptive statistics. A composite measure of each domain (i.e., perceived qualities of program content, perceived qualities of program implementers, and perceived program effectiveness) was created based on the total scores of each factor divided by the number of items in that domain. Pearson correlation analysis was used to examine if the program content and program implementers were related to the program effectiveness. A one-way analysis of variance (ANOVA) was used to assess the differences in the mean of each factor across grade levels. Multiple regression analysis was performed to compare which factor would predict the program effectiveness. All analyses were performed by using the Statistical Package for Social Sciences Version 16.0.

Results

The quantitative findings based on the closed-ended questions are presented in this paper. Several observations can be highlighted from the findings. In the first place, roughly four fifths of the participants generally had positive perceptions of the program (Table 1), including clear objectives of the curriculum (84.21%), well-planned teaching activities (82.63%), and adequate peer interaction amongst the students (82.48%). In addition, a high proportion of the students had positive evaluation of the instructors (Table 2). For example, 89.06% of the participants perceived that the program implementers were very involved; 88.63% of the participants believed that the implementers were ready to offer help when they are in needs; 88.44% agreed that implementers encouraged them to participate in the activities.

As shown in Table 3, more than four fifths of the respondents perceived that the program promoted their development, including the ability to distinguish between the good and the bad (84.89%), competence in making sensible and wise choices (83.81%), ability to resist harmful influences (83.68%), and overall development (84.15%). Interestingly, while roughly three quarters (78.17%) of the participants would recommend the program to their friends who have similar needs, only 67% of them would join similar programs in the future. Finally, more than four fifths (85.17%) of the participants indicated that they were satisfied with the program (Table 4). Regarding the degree of program adherence estimated by the program implementers, the mean level of adherence was 85.48%, with a range from 20% to 100%.

Reliability analysis with the schools as the unit of analysis showed that Form A was internally consistent (Table 5): 10 items related to the program content (α=0.99), 10 items related to the program implementers (α=0.99), 16 items related to the benefits (α=1.00), and the overall 36 items measuring program effectiveness (α=0.99). Results of correlation analyses showed that both program content ($r=0.84$, $p<0.01$) and program implementers ($r=0.74$, $p<0.01$) were strongly associated with program effectiveness. These positive relationships were consistent across all grade levels (Table 6).

To examine differences in the subjective outcome measures (i.e., program content, program implementers, and program effectiveness) across levels, a series of one-way ANOVAs were performed with different indicators as dependent variables and grade level (i.e., Secondary 1–3 levels) as an independent variable. Significant results were found in program implementers ($F_{(2, 559)}=3.53$, $p=0.03$, $\eta^2=0.01$), program effectiveness ($F_{(2, 559)}=6.85$, $p=0.00$, $\eta^2=0.02$), and the total program effectiveness ($F_{(2, 559)}=4.88$, $p=0.01$, $\eta^2=0.02$) (Table 5).

Table 1 Summary of the program participants' perceptions toward the program content.

	Respondents with positive responses (options 4–6)							
	S1		S2		S3		Overall	
	n	%	n	%	n	%	n	%
1. The objectives of the curriculum are very clear.	24,547	84.81	25,849	83.30	21,369	84.52	71,765	84.21
2. The design of the curriculum is very good.	23,548	81.41	24,614	79.42	20,523	81.22	68,685	80.68
3. The activities were carefully planned.	23,929	82.92	25,253	81.62	21,025	83.35	70,207	82.63
4. The classroom atmosphere was very pleasant.	23,317	80.90	24,818	80.26	20,858	82.77	68,993	81.31
5. There was much peer interaction amongst the students.	23,466	81.72	25,272	81.96	21,042	83.77	69,780	82.48
6. I participated actively during lessons (including discussions, sharing, games, etc.).	23,464	81.26	24,970	80.64	20,618	81.73	69,052	81.21
7. I was encouraged to do my best.	22,484	77.90	23,768	76.77	19,911	78.96	66,163	77.88
8. The learning experience I encountered enhanced my interest towards the lessons.	22,626	78.68	23,564	76.32	19,776	78.55	65,966	77.85
9. Overall speaking, I have very positive evaluation of the program.	22,383	77.63	23,615	76.34	19,974	79.25	65,972	77.74
10. On the whole, I like this curriculum very much.	22,740	79.07	23,673	76.65	19,916	79.14	66,329	78.29

All items are on a 6-point Likert scale with 1=strongly disagree, 2=disagree, 3=slightly disagree, 4=slightly agree, 5=agree, 6=strongly agree. Only respondents with positive responses (options 4–6) are shown in the Table. S1, Secondary 1 level S2, Secondary 2 level; S3, Secondary 3 level.

Table 2 Summary of the program participants' perceptions toward the program implementers.

	Respondents with positive responses (options 4–6)							
	S1		S2		S3		Overall	
	n	%	n	%	n	%	n	%
1. The instructor(s) had a good mastery of the curriculum.	25,031	86.60	26,666	85.98	22,235	88.06	73,932	86.88
2. The instructor(s) was well prepared for the lessons.	25,535	88.41	27,125	87.52	22,434	88.83	75,094	88.25
3. The instructor(s) teaching skills were good.	25,011	86.90	26,341	85.38	22,031	87.33	73,383	86.54
4. The instructor(s) showed good professional attitudes.	25,452	88.22	26,969	87.09	22,357	88.57	74,778	87.96
5. The instructor(s) was very involved.	25,682	88.97	27,362	88.42	22,646	89.79	75,690	89.06
6. The instructor(s) encouraged students to participate in the activities.	25,547	88.56	27,118	87.62	22,485	89.14	75,150	88.44
7. The instructor(s) cared for the students.	25,138	87.18	26,585	85.85	22,114	87.70	73,837	86.91
8. The instructor(s) was ready to offer help to students when needed.	25,536	88.52	27,174	87.81	22,594	89.55	75,304	88.63
9. The instructor(s) had much interaction with the students.	24,558	85.11	26,105	84.31	21,871	86.66	72,534	85.36
10. Overall speaking, I have very positive evaluation of the instructors.	25,670	88.78	27,234	87.89	22,628	89.61	75,532	88.76

All items are on a 6-point Likert scale with 1=strongly disagree, 2=disagree, 3=slightly disagree, 4=slightly agree, 5=agree, 6=strongly agree. Only respondents with positive responses (options 4–6) are shown in the Table. S1, Secondary 1 level; S2, Secondary 2 level; S3, Secondary 3 level.

Post-hoc analysis using Bonferroni adjustment revealed that significant difference was found between Secondary 1 (M=4.65) and Secondary 2 (M=4.56) students towards their perceptions of program implementers ($p=0.02$). Significant grade differences were also shown when comparing students' perceptions toward the program effectiveness (Secondary 1: M=3.45, Secondary 2: M=3.34, Secondary 3: M=3.36, $p<0.05$). Similar results were revealed in the overall program effectiveness (Secondary 1: M=4.03, Secondary 2: M=3.94, Secondary 3: M=3.97, $p<0.05$). It is noteworthy that the above differences were not significant between Secondary 2 and 3 classes ($p>0.05$). Overall speaking, junior students perceived the program as more effective than their senior counterparts.

Table 7 presents multiple regression analysis results. Higher positive views toward the program were associated with higher program effectiveness ($p<0.01$). Unexpectedly, higher positive views toward the program implementers were associated with lower program effectiveness ($p<0.01$). Further analyses showed that perceived program ($\beta=1.01$) was a significantly stronger predictor as compared to program implementers ($\beta=-0.19$). This model explained 71% of the variance toward the prediction of program effectiveness.

Discussion

There are three purposes of this study. First, it attempted to examine the effectiveness of the Tier 1 Program of the Project PATHS based on different cohorts of students. Second, it explored whether subjective outcome evaluation measures were varied by students' grade levels. Third, the predictors of perceived program effectiveness from the program participants' perspective were examined.

Findings in the present study showed that program participants generally perceived the program positively, in terms of the program design, program implementers, and program effectiveness. Results of the current study were generally in line with the subjective outcome evaluation findings which showed that a high proportion of the program participants had favorable perceptions of the program, the program implementers and helpfulness of the program (22–24). Furthermore, the findings are consistent with prior research based on objective outcome evaluation, process evaluation and interim evaluation (e.g., 18, 19). Taken as a whole, different stakeholders had positive perceptions of the program, program implementers, and perceived effectiveness of the program.

Regarding grade differences in the subjective outcome evaluation measures, findings generally showed that students in lower grade level perceived the program more positively than those in the higher grade levels. There are two explanations for this observation. First, as interactive curricular-based youth development programs are relatively new in Hong Kong, Secondary 1 students might find the program more interesting than do Secondary 2 and 3 students. Second, with developmental maturation, senior students may become more critical and anti-authority, thus giving lower ratings in the subjective outcome evaluation. Nevertheless, it is noteworthy that although there were differences across grades in some of the indicators, the evaluation was positive in all grade levels. Furthermore, in view of the low effect size of the significant differences, the related differences should be interpreted with caution.

In conjunction with previous studies (21, 25), both program factors (i.e., program content and program implementers) were significantly related to the perceived program effectiveness. These findings further supported the notion that effective implementation is multidimensional (14). What informative is that we found the aforementioned relationships did not varied by the students' grade level. Generally, participants, regardless of their grade levels, perceived the program more favorably, in terms of program content, program implementers, and program effectiveness. In other words, program content and program implementers are two crucial factors in determining the effectiveness on positive youth development

Table 3 Summary of the program participants' perception towards the program effectiveness.

The extent to which the Tier 1 Program (i.e., the program in which all students have joined) has helped your students	Respondents with positive responses (options 3–5)							
	S1		S2		S3		Overall	
	n	%	n	%	n	%	n	%
1. It has strengthened my bonding with teachers, classmates and my family.	22,922	79.49	23,784	76.87	19,875	78.97	66,581	78.44
2. It has strengthened my resilience in adverse conditions.	23,637	82.05	24,474	79.21	20,142	81.16	68,253	80.81
3. It has enhanced my social competence.	24,116	83.81	25,189	81.63	20,878	83.16	70,183	82.87
4. It has improved my ability in handling and expressing my emotions.	23,956	83.37	24,934	80.85	20,688	82.42	69,578	82.21
5. It has enhanced my cognitive competence.	23,920	83.18	24,883	80.66	20,635	82.18	69,438	82.01
6. My ability to resist harmful influences has been improved.	24,430	84.98	25,417	82.38	21,026	83.69	70,873	83.68
7. It has strengthened my ability to distinguish between the good and the bad.	24,737	86.05	25,799	83.71	21,295	84.90	71,831	84.89
8. It has increased my competence in making sensible and wise choices.	24,407	84.95	25,488	82.69	21,019	83.79	70,914	83.81
9. It has helped me to have life reflections.	23,573	82.02	24,900	80.77	20,699	82.47	69,172	81.75
10. It has reinforced my self-confidence.	23,265	81.03	24,076	78.14	19,929	79.41	67,270	79.53
11. It has increased students' self-awareness.	23,697	82.55	24,567	79.67	20,500	81.65	68,764	81.29
12. It has helped students to face the future with a positive attitude.	23,835	83.04	24,911	80.83	20,796	82.85	69,542	82.24
13. It has helped students to cultivate compassion and care about others.	23,906	83.16	25,063	81.29	20,819	83.00	69,788	82.48
14. It has encouraged students to care about the community.	23,208	80.85	24,213	78.55	20,189	80.51	67,610	79.97
15. It has promoted students' sense of responsibility in serving the society.	23,531	81.96	24,612	79.79	20,419	81.30	68,562	81.02
16. It has enriched the overall development of the students.	24,462	85.12	25,548	82.87	21,203	84.47	71,213	84.15

All items are on a 5-point Likert scale with 1=unhelpful, 2=not very helpful, 3=slightly helpful, 4=helpful, 5=very helpful. Only respondents with positive responses (options 3–5) are shown in the Table. S1, Secondary 1 level; S2, Secondary 2 level; S3, Secondary 3 level.

Table 4 Other aspects of subjective outcome evaluation based on the program participants' perception.

If your friends have needs and conditions similar to yours, will you suggest him/her to join this course?

Respondents with positive responses (options 3–4)							
S1		S2		S3		Overall	
n	%	n	%	n	%	n	%
23,287	81.42	23,539	76.60	19,129	76.50	65,955	78.17

The item is on a 4-point Likert scale with 1=definitely will not suggest, 2=will not suggest, 3=will suggest, 4=definitely will suggest. Only respondents with positive responses (options 3–4) are shown in the Table. S1, Secondary 1 level; S2, Secondary 2 level; S3, Secondary 3 level.

Will you participate in similar courses again in the future?

Respondents with positive responses (options 3–4)							
S1		S2		S3		Overall	
n	%	n	%	n	%	n	%
20,147	70.48	20,097	65.46	16,343	65.40	56,587	67.11

The item is on a 4-point Likert scale with 1=definitely will not teach, 2=will not teach, 3=will teach, 4=definitely will teach. Only respondents with positive responses (options 3–4) are shown in the Table. S1, Secondary 1 level; S2, Secondary 2 level; S3, Secondary 3 level.

On the whole, are you satisfied with this course?

Respondents with positive responses (options 4–6)							
S1		S2		S3		Overall	
n	%	n	%	n	%	n	%
24,481	85.63	25,846	84.17	21,427	85.72	71,754	85.17

All items are on a 5-point Likert scale with 1=unhelpful, 2=not very helpful, 3=slightly helpful, 4=helpful, 5=very helpful. Only respondents with positive responses (options 3–5) are shown in the Table. S1, Secondary 1 level; S2, Secondary 2 level; S3, Secondary 3 level.

program, regardless of students' grade level. This information can help program implementers and practitioners to unpack the relationships between program components and program effectiveness and also "build data-driven continuous improvement systems designed to ensure the delivery of high quality programming" (15, p. 356).

Contrary to previous findings (22–24, 26), program implementers showed a negative predictive effect on perceived program effectiveness. Some might question whether this unexpected result be related to the quality of program implementers, as previous literature highlights the role of this factor on program effectiveness (27–29). It is noteworthy that all program implementers in the Tier 1 Program were all experienced teachers and frontline social workers who had at least 3 years of experience in working with youths and received relevant formalized training workshops for more than 20 h. Furthermore, based on prior quantitative and qualitative findings (18–26), program participants reported that program implementers displayed good overall teaching skills, motivated to implement the program, expressed a strong self-efficacy for implementation and created an interacting and positive learning atmosphere for the students.

One possible explanation of this inconsistent result might be related to the unit of analysis of the data. In the present study, data was aggregated at the school-level and the school means for each scale were computed and used for analysis.

Table 5 Mean, standard deviations, Cronbach's α, and mean of inter-item correlations among the variables by grade.

	S1		S2		S3		Overall	
	M (SD)	α (Mean[a])	M (SD)	α (Mean[a])	M (SD)	α (Mean[a])	M (SD)	α (Mean[a])
Program content (10 items)	4.33 (0.31)	0.98 (0.86)	4.26 (0.35)	0.99 (0.91)	4.29 (0.30)	0.98 (0.87)	4.30 (0.33)	0.99 (0.89)
Program implementers (10 items)	4.65[b] (0.32)	0.99 (0.93)	4.56[b] (0.33)	1.00 (0.96)	4.61 (0.31)	1.00 (0.96)	4.60 (0.32)	0.99 (0.95)
Program effectiveness (16 items)	3.45[c] (0.30)	1.00 (0.94)	3.34[c] (0.30)	1.00 (0.96)	3.36[b] (0.29)	1.00 (0.95)	3.38 (0.30)	1.00 (0.95)
Total effectiveness (36 items)	4.03[b] (0.29)	0.99 (0.81)	3.94[b] (0.31)	0.99 (0.84)	3.97 (0.28)	0.99 (0.81)	3.98 (0.29)	0.99 (0.82)

[a]Mean inter-item correlations; [b]$p<0.05$; Bonferroni adjustment ($p=0.02$); [c]$p<0.01$; Bonferroni adjustment ($p=0.02$).

Table 6 Correlation coefficients on the relationship between program components and program effectiveness.

Variables	S1	S2	S3	Overall
Program content (10 items)	0.83[a]	0.85[a]	0.82[a]	0.84[a]
Program implementers (10 items)	0.75[a]	0.76[a]	0.70[a]	0.74[a]

[a]$p<0.01$.

Table 7 Multiple regression analyses predicting program effectiveness.

	Predictors		Model	
	Program content	Program implementers	R	R^2
	β[a]	β[a]		
S1	0.99[b]	–0.17	0.84	0.70
S2	0.95[b]	–0.10	0.85	0.73
S3	1.19[b]	–0.40[b]	0.84	0.70
Overall	1.01[b]	–0.19[b]	0.84	0.71

[a]Standardized coefficients; [b]$p<0.01$.

Researchers noted the danger of using aggregate data in analyzing differences among individuals within a group (30–33). In particular, von Eye and Bergman criticized the approach of aggregating data into higher levels that might widen the range of variability of results, increase the chance of losing information, reduce the statistical power, and thereby jeopardize precision (34). As pointed out by von Eye (10), "from a data analytic perspective…routine aggregation may not help explain sufficient amounts of variance is shared by the protagonists of methods for the analysis of intensive data" (p. 277). To date, little is known about the implications of these problems because empirical work on the distinction between aggregated student-level and school-level data is largely lacking. It is not clear whether the results of MANOVAs and regression analyses will be biased if the data is analyzed by different levels. Future research should re-analyze the data and examine the relationships between students' perception towards the program and its effectiveness by using another level of analysis (i.e., student as the unit of analysis).

One of the limitations of the present study is the cross-sectional nature of the data. It is thus impossible to conclude the causal direction of the contribution of program and implementers on perceived effectiveness. Future studies should collect data at several points in time and also include various predictors, such as school and organization characteristics. As showed in evaluation literature, these factors were likely to affect program effectiveness and implementation quality (35–37). Another potential limitation of the study is the self-report data from the perspective of the participants. Future studies should evaluate the program by collecting information from different approaches (e.g., focus group interviews, diaries, and process evaluation) and sources (e.g., students, social workers, parents).

Despite the aforementioned limitations, the current study contributes to the positive youth development literature in several ways. It reveals what program components are related to perceived program effectiveness. Shek (18) argued that more research work is needed on subjective outcome evaluation, especially in social work education. Catalano et al. (13) also commented that "if we are to discern why these (PYD) programs are effective, it is clear that it will be important in the future for programs to define and assess implementation methods and change strategies, and that they also evaluate the impact on youth development constructs…and how these effects varied by subgroups" (p. S94). The findings of the study can be viewed as a constructive response to the existing social work practice literature. It provides insights to practitioners when designing appropriate youth program for Chinese adolescents.

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